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15. Abstract <p>The work on the project is going according to plans, and all ground-truth has been extended to August 1. It was an unnormal large amount of snow in the test-area Mo i Rana this year.</p> <div style="text-align: right;"> <p>RECEIVED BY NASA STI FACILITY</p> <p>DATE:</p> <p>DCAF NO. 2 2 4 8 0 0</p> <p>PROCESSED BY</p> <p><input checked="" type="checkbox"/> NASA STI FACILITY</p> <p><input type="checkbox"/> ESA - SDS <input type="checkbox"/> AIAA</p> </div>		

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II TECHNIQUES

Work is going according to plans. Low-flying aircraft was used for two periods to obtain snow-maps by the use of the natural gamma-radiation for the whole test area in the south. We begin to gain some experience with this type of work, and it goes very smoothly. All the data are punched on cards and computations are done in our computer where the constants from earlier flights are stored. The result of the measurements this year for the Hardangervidda plateau was for the west side that the amount of snow was well above average, 130-140%. On the east side it was normal to a little below, 90-100%.

The catchment areas were also measured on the ground by regular weighings in the traditional way.

For the test area in the north, the Rana-area, the amount of snow was for above average 140-150%, as recorded by measurements on the ground.

All measurements were also confirmed by maps compiled by the Norwegian Meteorological Institute based on recordings made at special precipitation stations and statistics from previous years. We therefore have good ground-truth data for the test sites.

The Norwegian satellite backing/receiving station in Northern Norway (Tromsø) has also been approached to see if it can deliver imagery from the NOAA-4 satellite. This would be very helpful in the snowmelt season. We have now the necessary computer programs to handle NOAA-data digitally. Work we have done so far indicate that digital imagery with a resolution of 900 metres in the visible range (0,6-0,7 m) will be of great value for snow-mapping.

III ACCOMPLISHMENTS

1) NASA has agreed to extend the project for the northern test area through the summer of 1976 up to August 1. This is due to the difficult conditions in

this area during summer test period of 1975.

Work has continued with the obtained computer programs and we have gained some experience for the future work on the project. We are now able to make subsets from the original NASA-tapes, make printouts, do simple clustering unsupervised and make a deskewed map with a variable scale. We are now trying out the programs on different types of objects like snow, ice and vegetation.

IV SIGNIFICANT RESULTS

None at this point.

V PUBLICATIONS

To increase the understanding for remote sensing in Norway a series of articles has been prepared and published by newspapers throughout the country. We feel that this kind of information is part of the project and important to gain support for future work.

VI PROBLEMS

None at this point.

VII DATA QUALITY AND DELIVERY

Satisfactory.

IX CONCLUSION

At this point work is concentrated on collecting ground truth. Snow-melt will start on about May 10, and it will be difficult to use the material and draw any conclusions before that date.

Oslo May 5, 1976

H. Heggaaen
Helge Heggaaen

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15 ABSTRACT		

I INTRODUCTION

IN THIS FIRST PART OF THE INVESTIGATION THE WORK HAVE BEEN CONCENTRATED TO A CATCHMENT AREA IN SOUTH NORWAY WITH MOUNTAINIOUS TERRAIN. THE LANDSAT IMAGES ARE BEING USED FOR MAPPING THE DECREASE IN THE SNOW COVER AND ITS EFFECT ON THE AREA.

II TECHNIQUES

LANDSAT MSS 5 AND 7 TRANSPARENCIES ARE BEING USED AND COLOR PRINTS HAVE BEEN MADE BY USE OF ADDITIV COLOR VIEWER. THE IMAGES HAVE ALSO BEEN STUDIED BY USE OF A ZEISS INTER-PTEOSCOPE. TRANSFORMATION OF THE SNOW LINE ON THE IMAGES TO BASE MAPS WILL BE DONE PHOTOGRAPHICALLY AND BY USE OF OPTICAL PANTOGRAPHS.

III ACCOMPLISHMENTS

THE TEST AREA HAVE BEEN COVERED BY ~~USE~~ LANDSAT IMAGES OF HIGH QUALITY OBTAINED DURING THE PERIOD FEBRUARY 15. - JULY 28. 1975. THE IMAGES HAVE PROVEN WELL SUITED FOR SNOW MAPPING.

IV SIGNIFICANT RESULTS

NONE AT THIS STAGE OF THE STUDY

V PUBLICATIONS

NONE YET

VI PROBLEMS

IN AREAS WITH ROUGH MOUNTAIN TERRAIN MINOR PROBLEMS ARRISSES IN CONNECTION WITH SHADDPONS, BUT THEY DO NOT AFFECT THE STUDY AS A WHOLE. WEATHER CONDITION HAVE BEEN UNFAVOURABLE DURING LATE SUMMER AND FALL, SO THAT ~~NO~~ NO LANDSAT IMAGES HAVE BEEN RECORDED AFTER JULY 28. BECAUSE OF VERY HEAVY ACCUMULATION OF SNOW DURING WINTER AND SPRING, IT WAS STILL A LOT OF SNOW LEFT IN THE MOUNTAINS BY THE END OF JULY.

VII DATA QUALITY AND DELIVERY

THE QUALITY OF IMAGERY AND AVAILABILITY ARE GOOD

VIII RECOMMENDATIONS

NONE

IX CONCLUSIONS

THE STUDY IS PROCEEDING SATISFACTORILY.
ANOTHER TEST AREA FURTHER SOUTH WILL BE ALSO BE
INVESTIGATED. HERE OBLIQUE AERIAL PHOTOGRAPHS AND OTHER
GROUND TRUTH INFORMATION ON THE SNOW COVER WILL
ALLEVIATE THE INTERPRETATION OF THE LANDSAT IMAGES.

OSLO APRIL 28, 1975

Johnny Skorge

JOHNNY SKORGE